AN ANALYSIS OF THE CURRENT AGRICULTURAL PRODUCTION SYSTEMS IN BANAT

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INTRODUCTION

Banat and the Western Plain are the areas with the highest farming potential in the country, favoured by both climate conditions and soil resources. Soils for almost all types of crops can be found in these areas. Nevertheless, the crop level is low. This affects not only farmers' profits, but also their motivation to develop the farming sector.

METHODS

The present study is based on an analysis of existing agro-ecological data and an interdisciplinary analysis of a group of 14 farms grouped in two categories, according to their cultivated area (7 larger farms and 7 average farms). From the beginning, this study was aimed at obtaining results of practical relevance and use. To this end, we have organised meetings and working sessions both with farmers and agricultural consultants for feedback and data cross-checking. The analysis of the 14 farms was based on the farmers' answers to questionnaires containing questions from interdependent fields chosen by mutual agreement, for evaluation purposes.

Geographical borders and description of the area of interest

From the administrative point of view, the studied territory comprises Caras-Severin, Timis, Arad and Bihor counties. It is located in the centre of the northern hemisphere: 44°27'–47°35' latitude North and 20° 15'–22°52' longitude East. The territory has a wide variety of ecological conditions as a result of the numerous variable (cosmic-atmospheric and edaphic) factors that influence the environment in which plants and crops grow.

Basic agricultural and ecological characteristics

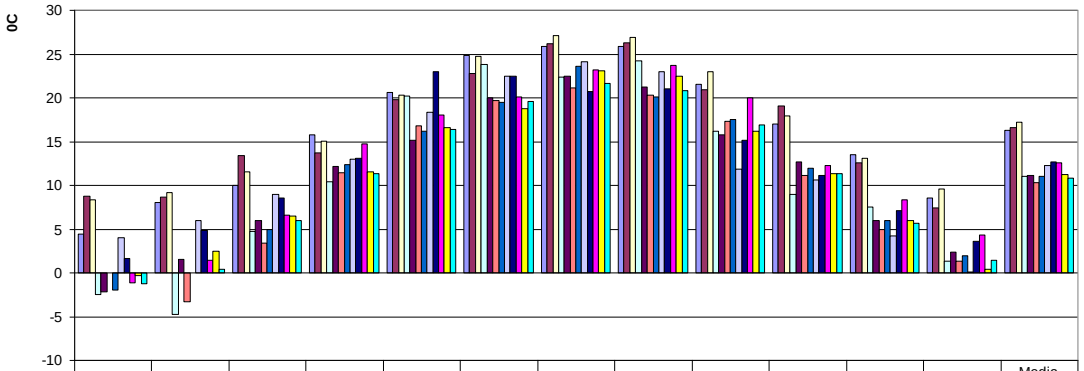
A large variety of factors influence the studied territory: geomorphologic (diverse landforms); geo-litholytic (a wide range of parent materials and rocks on which soils develop); macroclimate and microclimate-related, hydrological and edaphic. The correlation between such factors and the anthropic influences has led to many soil types with specific properties (which may be related or completely different), in continuous evolution.

According to the Romanian System of Soil Taxonomy (RSST 2003), in Romania's Western area there are 11 soil classes, 23 soil types with 107 subtypes, and 300 soil units with numerous categories having clearly defined properties, productive capacity and fertility maintenance and increase measures. The most common soil types in the studied area are chernozem (12.64%) districambosol (12.66%), luvosol (13.70%) and preluvosol (12.70%).

There are small differences (below 0.3°C /1° latitude) between the northern and the southern part of the studied area. The differences between the western and the eastern part (about 12°C) are caused mostly by differences in altitude of about 2100 m, i.e. a 0.6°C decrease for 100 m of altitude (Figure 1. Average monthly temperatures in a period of 10 years. Source: Timisoara Meteorological Station).

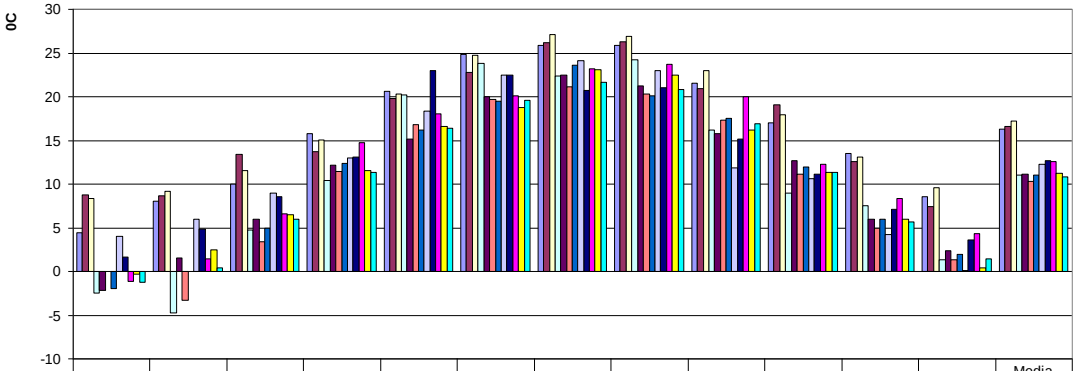
From the point of view of the altitude, there is a difference of about 80 l/m^2 which corresponds to a 60 l/m^2-increase in the rainfall volume per a 100-m increase in altitude (Figure 2. Average monthly rainfall in a period of 10 years. Source: Timisoara Meteorological Station).

Figure 1.



	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Media anuala
2000	4,4	8	10	15,8	20,6	24,8	25,9	25,9	21,5	17	13,5	8,6	16
2001	8,8	8,7	13,4	13,7	19,8	22,8	26,2	26,3	20,9	19,1	12,6	7,4	17
2002	8,3	9,2	11,5	15,1	20,3	24,7	27,1	26,9	23	17,9	13,1	9,6	17
2003	-2,5	-4,7	4,7	10,4	20,2	23,8	22,4	24,2	16,2	9	7,5	1,3	11
2004	-2,2	1,5	6	12,2	15,2	20	22,5	21,2	15,8	12,7	6	2,4	11
2005	0	-3,3	3,4	11,4	16,8	19,7	21,1	20,3	17,3	11,1	5	1,3	10
2006	-2	0	5	12,4	16,2	19,5	23,6	20,1	17,5	12	6	2	11
2007	4	6	9	13	18,3	22,5	24,1	23	11,9	10,6	4,2	0,1	12
2008	1,7	4,8	8,6	13,1	23	22,5	20,7	21	15,2	11,1	7,1	3,6	13
2009	-1,1	1,4	6,6	14,7	18	20,1	23,2	23,7	20	12,3	8,3	4,3	13
2010	-0,3	2,5	6,5	11,5	16,6	18,8	23,1	22,5	16,2	11,3	6	0,4	11
Media multianuală	-1,2	0,4	6	11,3	16,4	19,6	21,6	20,8	16,9	11,3	5,7	1,4	11

Average monthly temperatures in a period of 10 years.
Source: Timisoara Meteorological Station



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2009	-1,1	1,4	6,6	14,7	18	20,1	23,2	23,7	20	12,3	8,3	4,3	13
2010	-0,3	2,5	6,5	11,5	16,6	18,8	23,1	22,5	16,2	11,3	6	0,4	11
Media multianuală	-1,2	0,4	6	11,3	16,4	19,6	21,6	20,8	16,9	11,3	5,7	1,4	11

Figure. 2. Average monthly rainfall in a period of 10 years.
Source: Timisoara Meteorological Station

In the past years, climate conditions have fluctuated, years with rainfall deficits alternating with years of normal rainfall volumes. Frequently, precipitations have an irregular distribution. As a result, in recent years, rainfall deficits have been recorded in summer, while exceeding rainfalls have occurred in winter and spring. The unfavourable effect of summer drought increases due to the frequent very high temperatures. Under the circumstances, water management becomes vital if good are expected. Essentially, in the cold season water must be accumulated and retained in large quantities in soil, in order to ensure the amount of water that crops need during summer months.

RESULTS

The agro-ecological analysis of 14 farms (7 larger farms and 7 average farms) in the studied territory (Caras-Severin, Timis, Arad and Bihor counties) has taken the following data into consideration:

1. Farm information:
- agricultural land in use, type of property, types of soils, environmental data (precipitations, agricultural and climate-related phenomena);

2. Main farm equipment
- tools and machinery, plant protection equipment, silos and storage capacity, labour force and its profile;

3. Production systems
- crop rotation, ploughing and sowing systems, data on seeds;
- types of crops with details (spring, summer);
- plant protection works (fertilisers per crop/application period, amount applied/ha);
- production obtained per hectare;
- amount of harvested crops;

4. Marketing
- marketing channels, period of selling the production, obtained prices;
- grants;

5. Economic data
- production costs/ha/crops: costs of machinery, seeds, works, fertilisers, plant protection, harvesting, selling, leasing);

6. Calculation the gross margin per crop.
7. Evaluation of optimisation issues and areas: technology, marketing, others.

The data (summarised in the table below) were processed and discussed with the farmers. Several hypothetical solutions to the farmers' problems were dealt with. After that, the data were given directly to the farmers or made available online.

CONCLUSIONS

The analysis of the information given in the questionnaires or during the discussions with the farmers, the factors that lead to low crop production levels are the following:

- planting crops off the optimal season, owing to maize-wheat rotation which is very frequent both in average and larger-area farms; this causes stalky grains to sprout improperly and leads to low density/ha;
- the high seed price makes farmers produce their own amount of seeds (especially wheat and barley seeds) necessary for sowing, which results in decreased seed quality;

- the fertilisation ratios are unbalanced; phosphorus fertilisers are applied in very small quantities, while potassium fertilisers are completely excluded from the fertilisation programme of both average and larger farms;
- crop protection substances are not applied on crops during the growing season, except for weed control. In all analysed farms, crop disease control is performed very rarely, because farmers do not have the required equipment to treat plant ears in the vegetation period and to obtain superior quality indicators and higher selling prices.

The analysis of the production marketing data has revealed that in the studied small and average farms, producers prefer to sell their production immediately after harvesting, although this means selling it for a low price. For various reasons, in the studied area, producers neither store their annual production, nor sell it for higher prices in the following years.

The discussions with the farmers have indicated that most (large and average) producers tend towards a conjectural marketing policy for the following reasons:

- lack of an organised cereal market and a guaranteed minimum price;
- lack of storage areas that may allow farmers to store their production instead of selling it immediately after harvesting, when prices are the lowest;
- lack of associations that would allow price negotiations for larger quantities;
- lack of financial resources needed to support and resume the production activity makes farmers sell their production as soon as they have harvested it;
- the production quality fluctuates with every year because farmers do not apply the same technology (faulty fertilisation, low-quality seeds, no plant protection treatment and, last but not least, unfavourable climate conditions);
- because of the small amounts obtained per hectare, producers cannot play an important part on a poorly organised market;
- lack of precise information about the production obtained in a certain area and its destination.

The solution to the above issues may be a consolidated, stable and competitive agricultural market similar to the market in the other EU Member States. This will bring stability and higher profits for agricultural producers.

REFERENCES

1. **P.I. Otiman** - Agricultura României la cumpăna dintre secolul XX – un secol al deznădejdii –şi secolulXXI – un secol al speranţei -Edit. Agroprint Timişoara, 2002.

2.www.insse.ro

Summary of data about farms covering over 500 ha

Farms covering over 500 ha										
		SC Columirom SRL	SC Max Agro SRL	SC VESTAGRAR SRL	SOC.AGR. INFRATIREA	AGRICOLA PISCOLT SRL	SC AGRODIN SRL	SC AGROINDUSTRIALA	Total ha	%/Average
Total ha available in 2009		1050	2459	1450	2117	676	500	1698	9950	
Ha owned		95	1459	60	-		-	1698	3312	**33.29**
Ha in long-term leasing		955	1459	1390	2117	676	51	-	6648	**66.71**
Autumn crops	Wheat	450	363	700	888	285	220	690	3569	**39.4**
	Rape	70	238			49			357	
Spring crops	Maize	335	956	750	1229	187	380	1008	4845	**60.6**
	Sunflower	100				100			200	
	Oats		514						514	
Fertilisers per wheat crop, produce, kg per ha and the period of their use.		NPK 18:48:0- 100 kg/ha- 25.09. Urea - 200 kg/ha, 4.02 (110kg/ha s.a)	Wheat NPK 27:27:0- 200 kg Urea- 150 kg/ha (123 kg/ha s.a)	300 NPK when sowing Ammonium nitrate - 200 kg/ha (119 kg/ha s.a)	300 NPK 15:15:15 Ammonium nitrate - 200 kg/ha (119 kg/ha s.a)	N:P:K 20-20-0-200 kg Ammonium nitrate - 200 kg/ha (114 kg/ha s.a)	Ammon-ium nitrate 300 kg (111 kg/ha s.a)	wheat 120 kg/ha s.a N		Average 116 kg/ha s.a N
Production	Wheat	4300	5100	5150	4572	3350	4000	4200		4381
	Maize	8700	10200	7020	5579	6200	6000	6000		7099
	Barley									
	Oats		3700							3700
	Sunflower	2200				2500				2350
	Soy			2500	1682					2091
	Rape		1900	2600		2000				2166

Summary of data about farms covering average areas (100 – 500 ha)

Farms covering average areas (100-500 ha)										
		SC AGRO MATEB SRL	SA TAMIS	SC CRIS CON AGRO SRL	CHEREJI SRL	SC AGRONISCIPIVET SRL	P. PIRSAN	EAC POPA BUJOR	Total ha	%/Average
Total ha available in 2009		343	400	400	143	146.97	125	136	1693.97	
Ha owned		-	45	400		35	61	31	572	**33.77**
Ha in long-term leasing		343	350	-	143	111.97	64	110	1121.97	**66.23**
Autumn crops	Wheat	178	220	150	21	30	47	114	760	**57.7**
	Barley			100		10	23		133	
	Rye				85				85	
Spring crops	Maize	165	180	20	37	80	20	22	524	**42.3**
	Sunflower			100		26	11		137	
	Barley			30			20		50	
Fertilisers per wheat crop, produce, kg per ha and the period of their use.		NPK 20:20:0- 300 kg/ha- October Ammonium nitrate - 300 kg/ha, Spring (127kg/ha s.a)	400 kg/ha Ammonium nitrate, spring (148 kg/ha s.a)	200 NPK when sowing 20:20:0 Urea - 200 kg/ha Spring (132 kg/ha s.a)	200 NPK 20:10:0 Ammonium nitrate - 200 kg/ha (114 kg/ha s.a)	N:P:K 15-15-0-200 kg Ammonium nitrate - 200 kg/ha (104 kg/ha s.a)	Ammonium nitrate 250 kg (92 kg/ha s.a)	NPK 20:20:0-250 kg, Ammonium nitrate 300 kg (161 kg/ha s.a)		Average 125 kg/ha s.a N
Production	Wheat	500	4000	5000	3500	5000	4200	4500		3814
	Maize	6000	8000	8000	5100	6200	6000	8000		6757
	Barley	3300	3500	4500			3800			3775
	Rye				4960					4960
	Sunflower	1900	2100		1700		1900			1900